

## CLAIMS

1. A method of preparing gypsum board comprising the steps of;
  - a) combining calcium sulphate hemi hydrate (stucco) with water to form an aqueous slurry,
  - 5 b) adding uncalcined gypsum to said slurry,
  - b) discharging the slurry onto a support so as to form a sheet of gypsum board wherein said uncalcined gypsum has a specific surface area below  $0.3 \text{ m}^2/\text{g}$ .
2. A method of preparing gypsum board as claimed in claim 1 wherein the said uncalcined  
10 gypsum has a specific surface area within a range of  $0.1 - 0.3 \text{ m}^2/\text{g}$ .
3. A method of preparing gypsum board as claimed in claim 1 wherein the said uncalcined gypsum has a specific surface area within a range of  $0.1 - 0.2 \text{ m}^2/\text{g}$ .
- 15 4. A method of preparing gypsum board as claimed in claim 1 wherein the uncalcined gypsum is dried before being added to said slurry.
5. A method of preparing gypsum board as claimed in claim 1 wherein the uncalcined gypsum is mixed with water and added to the stucco and water mixture as a slurry.  
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6. A method of preparing gypsum wallboard as claimed in claims 1 to 5 wherein the uncalcined gypsum typically has a particle size distribution within the range of  $0.1 - 1000$  microns.
- 25 7. A method of preparing gypsum wallboard as claimed in any one of the preceding claims wherein the uncalcined gypsum is present within the range of 5 to 50% weight on weight (w:w) of the calcium sulphate hemi hydrate.
8. A method of preparing gypsum wallboard as claimed in any one of the claims 1 to 7  
30 wherein the uncalcined gypsum is present within the range of about 10 -25% w:w of the calcium sulphate hemihydrate.
9. A method of preparing gypsum wallboard as claimed in any one of the preceding claims 1 to 7 wherein the uncalcined gypsum is present in the composition in an amount of about  
35 20% by w:w of the calcium sulphate hemihydrate.

10. A method of preparing gypsum wallboard as claimed in any one of the preceding claims wherein the uncalcined gypsum is synthetic gypsum.

5 11. A method of preparing gypsum wallboard as claimed in claim 11 wherein the uncalcined synthetic gypsum is desulphogypsum (DSG).

12. A method according to any one of the preceding claims wherein existing gypsum wallboard is crushed to a suitable size and added to the slurry to provide additional bulk to  
10 the wallboard mixture.

13 A cementitious composition comprising a mixture of a cementitious material, water and desulphurisation gypsum wherein the specific surface area of at least some of the desulphurisation gypsum is below 0.3 m<sup>2</sup>/g.  
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14. A cementitious composition according to claim 13 wherein the size of at least some of the desulphurisation gypsum (DSG) particles are within the range of 0.1 -1000microns.

15. A cementitious composition according to claims 13 or 14 wherein the desulphurisation gypsum is present in the composition in an amount of about 5 to 50% w:w of the stucco.  
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16. A cementitious composition according to claims 13 or claim 14 wherein the desulphurisation gypsum is present in the composition within the range of about 10 – 30% w:w of the stucco.  
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17. A cementitious composition according to claims 13 or 14 wherein the desulphurisation gypsum is present in the composition within the range of about 10 -20% w:w of the stucco.

18. A cementitious composition according to claims 13 or 14 wherein the desulphurisation gypsum is present in the composition in an amount of about 20% w:w of the stucco.  
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19. A cementitious composition according to any one of the claims 13 to 18 further comprising existing wallboard crushed or milled and added to the slurry to provide additional bulk to the wallboard mixture.

20. A cementitious composition according to any one of claims 13 to 19 wherein the uncalcined gypsum is uncalcined synthetic gypsum.
- 5 21. A cementitious wallboard produced by the method of claim 1.
22. A cementitious wallboard containing the composition of claim 10.